

Sensor Setup Guide

This document describes the setup for the following sensors:

- Fluid Level Sensor – tank levels for fuel*, water, gray water, live well, oil, and black water
- Fuel Flow Sensor – flow rate measurements of fuel for gasoline powered boats
- Fuel Data Manager – fuel used data from fuel flow messages it receives from up to three NMEA 2000 compatible engines
- Temperature Sensor – temperatures for water*, outside, inside, engine room, cabin, live well, bait well, refrigeration, and heating system
- Thru-Hull Temperature Sensor - temperatures for water*, outside, inside, engine room, cabin, live well, bait well, refrigeration, and heating system
- Speed Sensor – boat speed
- Pressure Sensor – pressure data: Engine Boost Pressure, Engine Oil Pressure, Engine Water Pressure*, Transmission Oil Pressure and Pitot Speed

* Sensor is pre-configured to display this information.

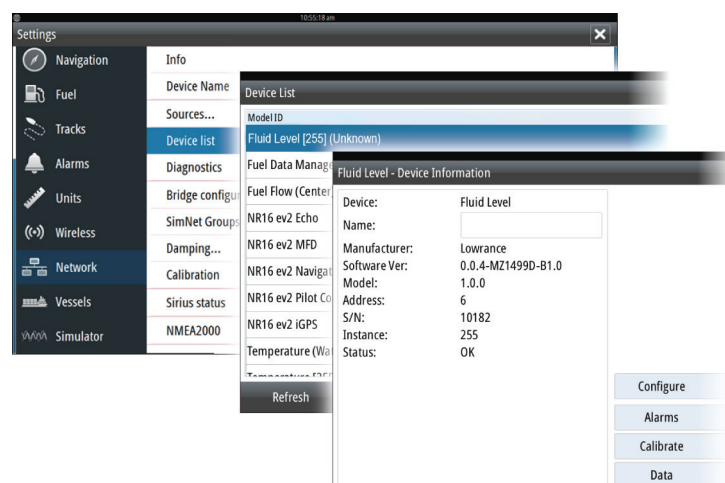
→ **Note:** The sensor must be installed and connected to the NMEA 2000 network. For installation and connection information, refer to the installation guide for the sensor.

After the sensor is connected, you can display sensor data. For more information, refer to your display operating manual.

Sensor Setup

Use the Device Information dialog to set the device name, configure, view sensor data, and for some sensors calibrate and set alarms.

Select the sensor in the Device List to display the sensor Device Information dialog. The following example shows selecting the Fluid Level sensor from a Simrad NSS Evo2.



Configuration

Select the Configure button in the Device Information dialog to open the configuration dialog.

Use the configuration dialog to configure specifics. For example, use the Fluid Level – Device configuration dialog to specify the:

- Tank (1, 2, 3, 4, or 5)
- Fluid type
- Size of the tank
- Instance - the Instance is determined by the configuration process and should not require user adjustment, except in the case of the Fuel Data Manager. The Fuel Data Manager can work with up to 3 engines. If more than 3 engines are mounted on the vessel, the instance of the second Fuel Data Manager will need to be manually changed from 0 to 1.
- Unconfigure - sets all the values of the selected sensor to the factory default settings

Calibration


The Fluid Level and Fuel Flow sensors can be calibrated from the Device Information dialog.

Fluid Level sensor calibration

The factory calibration settings for the Fluid Level sensor should be adequate for most applications, but if your tank has an irregular shape, your tank float uses a different resistance range other than the U.S. standard of 240-33 Ohms, or if greater accuracy is needed, calibration is recommended. We recommend starting calibration with an empty tank; you will fill the tank to complete the calibration process.

Select the Calibrate button in the Fluid Level - Device Information dialog to open the calibration dialog. Select the calibration point and then the fuel level for the point, as you fill your tank. There are three calibration options:

- **2-point calibration** - for rectangular or square-shaped tanks, where the capacity of the top half of the tank matches the capacity in the lower half of the tank. If you start with an empty tank;
 1. calibrate the tank as: empty
 2. fill the tank to full and calibrate it as: full.
- **3-Point Calibration** - for tanks that vary in shape from the top to the bottom. If you start with an empty tank;
 1. calibrate the tank as: empty
 2. fill the tank to full and calibrate it as: full
 3. deplete the tank to 1/2 full and calibrate it as: half full.
- **5-point calibration** - for tanks that vary greatly in shape from top to bottom. If you start with an empty tank;
 1. calibrate the tank as: empty
 2. fill the tank to full and calibrate it as: full
 3. deplete the tank to 3/4 full and calibrate it as: 3 Qtr. full
 4. deplete the tank to 1/2 full and calibrate it as: half full
 5. deplete the tank to 1/4 full and calibrate it as: 1 Qtr. full.

 **Warning:** Care should be taken that the above mentioned calibration for each 2, 3 or 5-point calibration is performed as instructed and in the correct sequence. Once a calibration method is started up, the process needs to be completed to all points, or else it has to be re-done from the beginning.

Fuel Flow sensor calibration

The factory calibration settings for the Fuel Flow sensor is adequate in most cases. However, if Fuel Used readings are off, calibration is recommended. Repeat the process for each Fuel Flow Sensor.

Warning: If you do not perform the calibration properly your fuel used and fuel remaining data may be inaccurate. If this occurs you can restore the default settings by selecting the Reset Fuel Flow button in the configure dialog and then recalibrate the sensor according to these procedures.

To check fuel flow accuracy you need to show Fuel Used data on your display. Use it to check the accuracy of information coming from the Fuel Flow sensor:

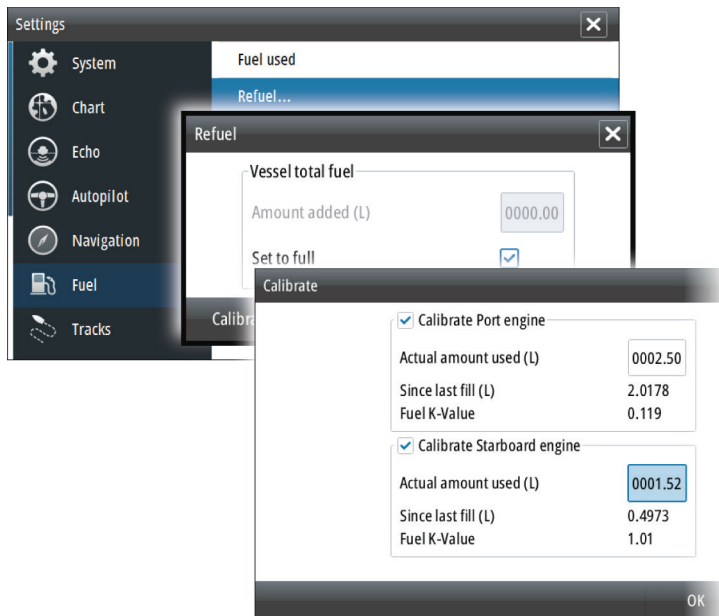
1. Fill up your tank and in the Refuel dialog specify that the tank is full. Do not calibrate your Fuel Flow sensor at this point.
2. Run your engine and burn several liters (a few gallons) of fuel. Be sure to run only the engine which has the fuel sensor.
3. Completely fill up your tank again, noting how much fuel you added to the tank. Compare that number to the Fuel Used figure shown on your display.

If the amount of fuel you added to the tank and the fuel used amount are off by more than 3 percent, we recommend the Fuel Flow sensor be calibrated.

To calibrate the Fuel Flow sensor:

1. Access calibration from the Refuel dialog after you have filled your tank and noted the amount you added to the tank.
2. Specify the amount added and select the Set to full check-box in the Refuel dialog.
3. Select the Calibrate button.

The following is an example showing the Refuel dialog and Calibrate dialog from a Simrad NSS evo2.



4. Set the 'actual amount used' based on amount of fuel added to tank.
 5. The 'Fuel K-Value' should now show a new value.
- **Note:** To calibrate multiple engine flow sensors repeat the steps, one engine at a time. Alternatively, run all engines simultaneously, and divide the 'Actual amount used' by the number of engines. This assumes reasonably even fuel consumption on all engines.

Alarms

Alarms and Data

Select the Alarms button to setup alarms for the Fluid Level sensor and the Pressure sensor. When a set value is exceeded an alarm is displayed.

→ **Note:** Alarms are not available for all sensors.

Data

Select the Data button to display data that the sensor is providing to the NMEA 2000 network.

Compliance

The sensors:

- Comply with CE under EMC directive 2004/108/EC
- Comply with the requirements of level 2 devices of the Radio communications (Electromagnetic Compatibility) standard 2008